

EXHIBIT 3

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

- - - - - x
WSOU INVESTMENTS, LLC :
D/B/A BRAZOS :
LICENSING AND : Case No.
DEVELOPMENT, : 6:20-cv-00980-ADA
Plaintiff, :
v. :
CANON, INC., :
Defendant. :

- - - - - x

REMOTELY CONDUCTED VIDEOTAPED DEPOSITION OF

ZHI DING, PHD

Tuesday, October 12, 2021

10:05 A.M. CST

Job No.: 402078

Pages: 1 - 123

Reported By: Karisa Ekenseair, CCR RPR

Transcript of Zhi Ding, PhD
Conducted on October 12, 2021

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1 Deposition of ZHI DING, PHD, conducted via Zoom
2 videoconference.
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10 Pursuant to notice, before Karisa J.
11 Ekenseair, Certified Shorthand Reporter in and for
12 the States of Arkansas, Oklahoma, and Illinois;
13 National Registered Professional Reporter, Notary
14 Public in and for the State of Arkansas.
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A P P E A R A N C E S

ON BEHALF OF THE PLAINTIFF (VIA ZOOM) :

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JEREMY DINEEN, VIDEOGRAPHER

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WITNESS: ZHI DING, PHD

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P R O C E E D I N G S

THE VIDEOGRAPHER: Here begins Disc Number
1 in the videotaped deposition of Zhi Ding, PhD in
the matter of WSOU Investments, LLD DBA Brazos
Licensing and Development, v. Canon, Inc., in the
U.S. District Court for the Western District of
Texas, Waco Division, Case Number
6:20-CV-00980-ADA.

10:05:12
10:05:16
10:05:24
10:05:27
10:05:31
10:05:36

Today's date is October 12th, 2021. Time
on the video manufacture is 10:05 Central. The
videographer today is Jeremy Dineen representing
Planet Depos. This video deposition is taking
place remotely. Would counsel please voice
identify themselves and state whom they represent?

10:05:37
10:05:42
10:05:47
10:05:50
10:05:52
10:05:55

MR. STERN: Sure. Good morning. This is
Hershy Stern from Kasowitz, Benson, Torres for
WSOU Investments, Plaintiffs. With me is Jayita
Guhaniyogi, also from Kasowitz, Benson, Torres and
as well for Plaintiff WSOU Investments.

MR. MARTINELLI: And this is Richard
Martinelli from Orrick on behalf of Canon, Inc.

10:06:22

THE VIDEOGRAPHER: The court reporter
today is Karisa Ekenseair representing Planet
Depos. Would the reporter please swear in the
witness?

10:06:22
10:06:23
10:06:26
10:06:28

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1	THE REPORTER: I have a short stipulation.	10:06:29
2	Will counsel please stipulate that in lieu	
3	of formally swearing in the witness, the reporter	
4	will instead ask the witness to acknowledge that	
5	their testimony will be true under penalties of	
6	perjuries, that counsel will not object to the	
7	admissibility of the transcript based on	
8	proceeding in this way and that the witness has	
9	verified that they are, in fact, Zhi Ding,	
10	beginning with the noticing attorney, please?	
11	MR. STERN: Agreed.	10:06:54
12	MR. MARTINELLI: And also agreed.	10:06:55
13	Zhi Ding, PhD	10:06:58
14	of lawful age, being first duly sworn, deposes and	10:06:58
15	says in reply to the questions propounded as	10:06:58
16	follows:	10:06:58
17	EXAMINATION	10:07:11
18	BY MR. STERN:	10:07:11
19	Q Good morning, Dr. Ding.	10:07:16
20	A Good morning.	10:07:18
21	Q Okay. So -- thank you. So we're doing	10:07:20
22	this deposition by remote. Have you given	10:07:25
23	deposition testimony remote, whatever means that	10:07:30
24	may be, Zoom or otherwise?	10:07:33
25	A No. I have not.	10:07:35

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1 we actually think about -- if we can just stay
2 with what was described in the patents.

3 If we go to the -- instead of page 11, if
4 we can move on to page 13, all right. So on
5 page 13, one can see that there is -- in the
6 bottom are the speech frame. So that's speech
7 frame has a total of eight hops, eight hops. Each
8 of the hop is marked by a column.

9 So we can see that during that
10 particular -- during that eight hops, you are
11 hopping from F3 to F1 to F4 and then F0 and F4 and
12 F4 again and so forth.

13 So when you finish this entire speech
14 frame, you have a -- you have eight hops, and that
15 forms one period T. And the idea of this
16 particular pattern says, if you look at it, there
17 are three yellow dashed arrows pointing to F4.
18 That meant that even though you had eight
19 frequencies to hop to but you didn't use all of
20 them in this particular case because the frequency
21 are select -- frequencies are selected
22 pseudorandomly, so accidentally you end up hitting
23 F4 three times.

24 And it would be -- it would be nicer if we
25 don't do that and the invention attempts to

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1 provide an algorithm or provide a method so that 11:21:41
2 you can achieve more diversified frequency hopping 11:21:45
3 without having to repeat certain frequencies in a 11:21:51
4 period of T. 11:21:56

5 Q So in that example on page 13, which is 11:22:01
6 from Figure 1 of the '346 patent; is that correct? 11:22:05

7 A It is from Figure 1 of the '346 patent 11:22:08
8 marked as a prior art, which -- 11:22:15

9 Q Okay. 11:22:16

10 A -- which was Figure 4 -- sorry, Figure 1. 11:22:17

11 Q So in this example, it's your view that 11:22:20
12 time period T is eight hops? 11:22:29

13 A Yes. In this example, the time period T 11:22:31
14 would be eight hops. That spans the entire speech 11:22:38
15 frame. That's -- that's where you would like 11:22:44
16 to -- you would like to provide more diversified 11:22:46
17 set of frequency hopping. And the solution was 11:22:50
18 provided by the '346 patent on the very next page. 11:22:52
19 That's actually Figure 3. 11:22:59

20 There, over that -- in same speech frame, 11:23:07
21 you have accomplished the use of all eight 11:23:10
22 differences, no repeat whatsoever. With these 11:23:14
23 two you -- one of ordinary skill in the art would 11:23:22
24 have understood what the problems were and what 11:23:26
25 the solution is. 11:23:33

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1	Q All right. So Dr. Ding, just to make	11:23:38
2	clear, between Figure 1 and Figure 3, your	11:23:43
3	understanding is that time period T is defined as	11:23:47
4	eight hops; is that correct?	11:23:49
5	A Yes.	11:23:51
6	Q And is time period T defined as eight hops	11:23:53
7	within the entirety of all the figures in the	11:23:58
8	patent?	11:24:01
9	A I'm sorry, not -- not the entirety of the	11:24:01
10	patent, but with specific examples explaining the	11:24:07
11	problem and the solution. The examples I have	11:24:15
12	cited from the patent indicate that the period is	11:24:18
13	T -- period T is eight. And in some examples,	11:24:21
14	they talk about the period T is actually four.	11:24:27
15	Q All right.	11:24:31
16	MR. STERN: So Will, can we pull up Tab 6	11:24:34
17	on to the screen and -- and Dr. Ding, Tab Number 6	11:24:39
18	next to you as well, and that's the '346 patent.	11:24:46
19	For the record, we're going to identify Exhibit	11:24:51
20	Ding 3 as U.S. Patent Number 7054346 and	11:24:54
21	colloquially refer to it as the '346 patent.	11:25:06
22	(Exhibit Number 3 marked for identification.)	11:25:16
23	Q Dr. Ding, do you have the '346 patent in	11:25:21
24	front of you?	11:25:23
25	A Yes, I do.	11:25:24

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1 actually have a diversified set, a diversified set
2 of frequencies to hop over. You would try
3 to -- to avoid repeats within T, okay, to the
4 extent possible.

11:28:39

11:28:45

11:28:48

11:28:53

5 So in that case, if your T is too -- if
6 your T is too large and it -- you only have N
7 frequencies, but your T is greater than N, then
8 any reasonable person, not even POSITA, but any
9 reasonable person would have understood that you
10 will have repeats because you get to select only
11 from N frequencies and you have more than N places
12 to put them.

11:28:54

11:28:59

11:29:06

11:29:10

11:29:14

11:29:17

11:29:20

11:29:24

13 So something will be repeated. And for
14 that reason, it is really a genuine and accurate
15 statement to limit T to an integer, right, that is
16 no greater than N in order to be consistent with
17 the invention that no repeats would take place
18 within a period of time T.

11:29:25

11:29:28

11:29:36

11:29:41

11:29:45

11:29:49

19 Q So you're saying T can be -- in your
20 definition, time period T can be equal to -- can
21 only be -- strike that.

11:29:52

11:29:59

11:30:03

22 It's your understanding as a POSITA that
23 time period -- the term "time period T" as used in
24 the claim can only be construed as equal to or
25 less than the N number of frequencies; is that

11:30:05

11:30:10

11:30:17

11:30:21

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1	correct?	11:30:26
2	A That's correct in the -- in light of the	11:30:26
3	patent -- the entire patent specification, the	11:30:31
4	examples, okay, and the implementation process I	11:30:35
5	have explained, as well the file history, that is	11:30:44
6	the most reasonable and inclusive claim	11:30:46
7	construction one can give to T.	11:30:54
8	T cannot be anything without considering	11:30:58
9	how many frequencies there are that you can hop	11:31:01
10	over. In other words, N. N is a number. How	11:31:04
11	many frequencies are there to hop over.	11:31:08
12	Q Dr. Ding, is there anywhere in the patent	11:31:14
13	other than the example, are there words in the	11:31:23
14	patent that define the term "time period T" as	11:31:25
15	being limited to or equal to the -- the N number	11:31:31
16	of frequencies?	11:31:36
17	A Within -- within -- within the patent	11:31:37
18	itself, it -- the patent does not explicitly say	11:31:47
19	so in the patent specification that T is limited	11:31:58
20	to N or to N or smaller. What I have stated was	11:32:00
21	that the patentee has presented to the patent	11:32:05
22	examiner that you -- that your entire invention is	11:32:11
23	to prevent repeats within T.	11:32:20
24	For that reason, in -- if -- if for this	11:32:27
25	particular algorithm to be feasible, you cannot	11:32:30

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1 have T greater than N and still avoid repeats of 11:32:35
2 prior -- prior selected frequencies. 11:32:42

3 Q Okay. So your construction of time period 11:33:00
4 T is based upon what the patentee says to the 11:33:06
5 patent examiner, correct? 11:33:13

6 A It's not just based on what patentee said 11:33:14
7 to patent examiner. A person of ordinary skill in 11:33:19
8 the art would read a patent, look at the example, 11:33:22
9 the example describes that there's a T in a Figure 11:33:25
10 1. There's T in Figure 3. And the patent 11:33:30
11 explains that there are incentives to provide a 11:33:34
12 mechanism that prior-selected frequencies should 11:33:39
13 not be repeated again for the sole purposes of 11:33:47
14 providing enough frequency diversity in the course 11:33:51
15 of an interleaving depth of a speech frame. 11:33:54

16 So N -- so that already gave you enough 11:33:59
17 knowledge and understanding about what the patent 11:34:06
18 is about, is to prevent repeats. And then a 11:34:08
19 well-trained person or a commonsense person would 11:34:13
20 think like the following: How many frequencies do 11:34:17
21 you have to hop over? If I only have four 11:34:21
22 frequencies to hop over, then if you make T to be 11:34:24
23 8 or 12, you will have repeats regardless of 11:34:28
24 whether it is stated explicitly in the patent or 11:34:32
25 not. 11:34:36

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1	hopping which is no longer than the amount of time	11:36:40
2	it would take to use each channel available for	11:36:42
3	frequency hopping once'."	11:36:47
4	Do you see that?	11:36:50
5	A Yes.	11:36:51
6	Q And that's your opinion of what the time	11:36:51
7	period T term should mean?	11:36:56
8	A That would be the limit. That would be	11:37:01
9	the constraint on the time period T. Yes.	11:37:04
10	Q Okay. And your construction is, is it	11:37:10
11	anywhere -- it's not anywhere in the specification	11:37:17
12	that it says that time period T is limited to a	11:37:19
13	preset amount of time for one cycle of frequency	11:37:22
14	hopping, which is no longer than the amount of	11:37:25
15	time it would take to use each channel available	11:37:28
16	for frequency hopping once, correct?	11:37:31
17	A I'm sorry, Mr. Stern. I'm a bit confused.	11:37:34
18	What was the question again?	11:37:40
19	Q Sure. You included your proposed	11:37:41
20	construction of the term time period T terms in	11:37:44
21	paragraph 56, correct?	11:37:48
22	A The term of construction is on page 2.	11:37:50
23	Q I'm looking at paragraph 56.	11:37:57
24	A Okay.	11:38:00
25	Q That's on page 21.	11:38:01

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1	A Yes.	11:38:06
2	Q Okay. So on page 21, paragraph 56, you	11:38:07
3	write, "In summary, it is my opinion that a POSITA	11:38:10
4	would have understood the time period T terms to	11:38:15
5	mean 'a preset amount of time for one cycle of	11:38:18
6	frequency hopping which is no longer than the	11:38:24
7	amount of time it would take to use each channel	11:38:28
8	available for frequency hopping once'."	11:38:34
9	Is that -- that's your construction?	11:38:37
10	A Yes. And that's consistent, as I said	11:38:38
11	more formally -- with a more formal presentation	11:38:41
12	on page 2.	11:38:45
13	Q I understand that. My question to you is:	11:38:48
14	That construction in those exact words, are there	11:38:52
15	found anywhere within the -- within the patent	11:38:55
16	specification?	11:38:58
17	A The answer is no. The claim	11:39:04
18	construction -- in my understanding of what claim	11:39:10
19	construction is, that the process needs a person	11:39:12
20	to read the entirety -- the totality of the	11:39:17
21	information that's available to the person and	11:39:22
22	view that at the -- at the time of the invention.	11:39:28
23	So this is not literally stated in the	11:39:32
24	patent '346 itself. But it is entirely consistent	11:39:38
25	and it captures what the -- what the '346 patent	11:39:46

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1	attempt to accomplish.	11:39:52
2	Q Understood.	11:39:57
3	A And also, I'm sorry, to -- this is very	11:40:01
4	broad construction already. We're not	11:40:06
5	limiting -- I mean, I'm not limiting T to be a	11:40:09
6	number, 8 or 16 or so forth. I think giving this	11:40:12
7	kind of broader construction to avoid repeats of	11:40:17
8	frequency selection, right, is in this -- not just	11:40:22
9	literally, but also in the spirit of '346	11:40:28
10	invention.	11:40:32
11	Q Okay. It's your understanding that while	11:40:34
12	the patentee did not expressly state so, that they	11:40:42
13	intended to limit time period T to be equal to or	11:40:49
14	less than the number of frequencies that could be	11:40:55
15	used for hopping?	11:40:58
16	MR. MARTINELLI: Objection. Form.	11:41:00
17	Q Correct?	11:41:01
18	A Not quite. It's the amount of time it	11:41:02
19	would take for you to -- for you -- if you were to	11:41:05
20	hop over the entire selection of available	11:41:11
21	frequencies, the time --	11:41:14
22	Q How -- so if there were eight frequencies,	11:41:17
23	how would you determine the time based upon the	11:41:21
24	eight frequencies?	11:41:24
25	A Well, one would first determine how much	11:41:26

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1	time it takes to complete one hop. And then	11:41:30
2	there -- if there are eight frequency total, it	11:41:36
3	would be eight times the amount of time it takes	11:41:38
4	to complete one hop and then the capital T, the T	11:41:41
5	variable would be limited to the amount of time	11:41:46
6	that is no longer than eight multiplied the	11:41:52
7	hopping -- I'm sorry, eight times the time it	11:42:00
8	takes for one hop to complete.	11:42:06
9	So if we just say one hop takes TH, then	11:42:08
10	there will be eight -- eight times TH is the	11:42:14
11	amount of time that one would limit the time	11:42:19
12	period T to.	11:42:23
13	Q Does it state anywhere in the patent how	11:42:24
14	long it would take to conduct one hop?	11:42:32
15	A No. I don't believe so. I don't -- but	11:42:34
16	it is stated -- it is explicitly explained in the	11:42:42
17	patent, if we would like to, you -- one would	11:42:48
18	look -- go back to exhibit -- I think you called	11:42:50
19	Exhibit 1 -- I beg your pardon, the patent '346	11:42:55
20	patent.	11:42:59
21	And one would look at Figure 1, Figure 3,	11:42:59
22	and -- to understand that there is a unit of time	11:43:02
23	that would take for one to complete one hop. If	11:43:09
24	we could go back and look at Figure 1 or Figure 3	11:43:13
25	of the exhibit, you will see that there is a	11:43:20

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1	defined frequency hopping time. So per hop, you	11:43:26
2	take equal amount of time for each hop.	11:43:32
3	So very often as we -- as the cliché says,	11:43:43
4	a picture is worth a thousand words. So	11:43:46
5	literally, it doesn't say so, but a person of	11:43:49
6	skill in the art looking at the picture would	11:43:52
7	understood -- would have understood that the	11:43:55
8	frequency hopping time per hop is limited to a	11:43:59
9	particular unit and they're all equal.	11:44:03
10	Q Dr. -- Dr. Ding, could you give us -- is	11:44:07
11	Bluetooth an example that uses a frequency-hopping	11:44:14
12	algorithm?	11:44:17
13	A I beg your pardon? Is Bluetooth an	11:44:18
14	example of what? Sorry.	11:44:21
15	Q That uses a frequency-hopping protocol?	11:44:22
16	A Bluetooth does use frequency hopping. It	11:44:24
17	does. Yes.	11:44:28
18	Q And how much spectrum does it use?	11:44:29
19	A I don't recall.	11:44:35
20	MR. MARTINELLI: Form.	11:44:36
21	THE WITNESS: At this moment. We can -- I	11:44:37
22	can look at the standard and find out, but suffice	11:44:41
23	to say, if I -- if I remember correctly, there are	11:44:46
24	dozens of frequencies you need to hop over. I	11:44:49
25	think the total number is -- about 72. That's	11:44:53

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1	from my recollection, but.	11:44:57
2	Q Does --	11:45:00
3	A If you need me to find out, I can find out	11:45:00
4	and tell you that.	11:45:03
5	Q Well, I'm -- 72 sounds about right to me.	11:45:04
6	We can go with that for these purposes.	11:45:08
7	A Okay.	11:45:12
8	Q Does -- does the Bluetooth standard in the	11:45:12
9	code define a time period, as in time period T?	11:45:15
10	MR. MARTINELLI: Objection. Form.	11:45:22
11	Outside the scope.	11:45:23
12	THE WITNESS: Does Bluetooth specify a	11:45:24
13	time period T? I don't know. I don't -- I don't	11:45:32
14	know whether Bluetooth try to develop an algorithm	11:45:37
15	for which frequency repeat would not take place or	11:45:45
16	not. I don't recall that.	11:45:48
17	Q Does every frequency-hopping algorithm	11:45:49
18	define a time period T?	11:45:56
19	MR. MARTINELLI: Objection. Form.	11:46:01
20	THE WITNESS: Not necessarily. It -- the	11:46:02
21	time T and N and F and all those variables are	11:46:08
22	specific to the algorithm -- the algorithm or the	11:46:14
23	objective. So in the context in the framework of	11:46:20
24	'346, these variables are explicitly sped up, even	11:46:25
25	if the claims themselves.	11:46:32

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1	Q Okay.	11:46:37
2	MR. STERN: Richard, can we take a short	11:46:45
3	break? I apologize. I just have to run out for a	11:46:48
4	second.	11:46:51
5	MR. MARTINELLI: No problem.	11:46:51
6	THE VIDEOGRAPHER: We are going off the	11:46:52
7	record at 11:46.	11:46:56
8	(A short break was had.)	11:47:00
9	THE VIDEOGRAPHER: We are back on the	11:57:37
10	record at 11:57.	11:57:42
11	BY MR. STERN:	11:57:46
12	Q Okay. All right. Dr. Ding, I believe a	11:57:49
13	couple seconds right before we took a break, you	11:58:04
14	stated that you don't believe that there's a time	11:58:08
15	period T that defines inside of the Bluetooth	11:58:12
16	frequency-hopping protocol; is that -- is that	11:58:19
17	fair?	11:58:26
18	A It's not totally true because one could	11:58:26
19	argue that there's a T based somewhere. But yeah,	11:58:31
20	within the Bluetooth protocol itself it does	11:58:37
21	have -- the Bluetooth standard itself does not	11:58:40
22	define a T as required in the patent '346.	11:58:44
23	Q Right. So I'm not even talking about in	11:58:54
24	reference to the '346 patent. I'm just asking	11:58:57
25	generally, the Bluetooth protocol for frequency	11:59:00

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1 So if -- if one looks at the totality of
2 the whole invention and the back and forth in file
3 history, I reach the conclusion that for -- the
4 patent is only meaningful, the algorithm is only
5 meaningful when you are preventing repeats over a
6 time period of T.

7 There are certain disclaimers in there one
8 can take out, but it's never supported -- it's not
9 supported by any evidence that claim '346 allows
10 repeat.

11 Q You just said there are certain
12 disclaimers to take out. What did you mean by
13 that?

14 A I think in Dr. Cooklev's declaration, he
15 opined that the patentee only stated that their
16 goal is to minimize frequency repeats in hopping,
17 and that's -- that's the kind of the equivocation
18 that I can see.

19 However, as I said, the patent
20 specification '346 never provide example other
21 than preventing repeats. There's no example in
22 '346 that says, oh, there's this other way of
23 allowing repeats.

24 Q Okay. So just so I'm clear on your
25 testimony, you agree that the patent -- the '346

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1	patent specification states that	12:05:34
2	you -- you -- that the invention is intended to	12:05:41
3	minimize repeats, therefore allowing some	12:05:42
4	repeating; however, the examples themselves	12:05:46
5	prevent repeats. Is that correct?	12:05:50
6	MR. MARTINELLI: Objection. Form.	12:05:53
7	THE WITNESS: No. It's not correct. The	12:05:53
8	patentee explicitly stated they are trying to	12:06:00
9	avoid repeats. And it is my opinion that they	12:06:03
10	provided algorithms and embodiment that	12:06:07
11	accomplishes that. And they also presented to the	12:06:10
12	patent examiner, and that was -- that is the	12:06:13
13	invention of '346. And it is agreed by the	12:06:14
14	examiner when they -- when the patent was issued.	12:06:18
15	I think they can be sentences here and there that	12:06:24
16	Dr. Cooklev relied on to argue otherwise, but I	12:06:29
17	disagree.	12:06:34
18	Q But there are sentences that state that	12:06:34
19	the invention was intended to minimize or reduce	12:06:39
20	repeats; is that correct?	12:06:42
21	A There are sentences that -- maybe one or	12:06:45
22	two sentences that says this particular algorithm	12:06:50
23	would minimize and reduce repeats. Naturally when	12:06:53
24	there's no repeats, you minimize it. There's no	12:06:59
25	repeats, you reduce it. So that -- that kind	12:07:03

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1 of statement does not broaden the invention. It 12:07:05
2 only says what the invention is able to accomplish 12:07:09
3 by preventing repeats in frequency hopping. 12:07:14

4 Q Understood. Your opinion is that the 12:07:19
5 invention requires absolutely no repeats of use of 12:07:24
6 frequencies during the entirety of time period T, 12:07:31
7 correct? 12:07:39

8 A That's my -- that's my opinion for -- 12:07:39
9 based on the file history. That's what's 12:07:43
10 presented by the patentee and that's what's 12:07:46
11 explained by the examiner in allowing this patent. 12:07:50

12 Q Okay. Now, if time period T is eight 12:07:56
13 hops, the entire time period T is eight hops, 12:08:05
14 right? I'm sorry, strike that. 12:08:11

15 If -- if there are only eight frequencies 12:08:13
16 that could be used, what is time period T? 12:08:18

17 A An honest and intellectually accurate 12:08:21
18 construction is that period T needs to be shorter 12:08:30
19 than eight frequencies to prevent repeats. So 12:08:33
20 we're not saying it must be eight. It could be 12:08:40
21 four or six. 12:08:43

22 Q So could be anywhere between zero and 12:08:46
23 eight? 12:08:50

24 A No. Zero wouldn't be a hopping period. 12:08:52
25 One wouldn't be frequency hopping because you're 12:08:57

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1	just repeating every time, so it's just one	12:09:01
2	frequency. I'm not even sure two makes sense in	12:09:04
3	the context of this invention. But it needs to be	12:09:09
4	something, you know, closer to four or between	12:09:12
5	four and eight would be reasonable in this	12:09:17
6	particular example.	12:09:20
7	Q Okay. So -- so time period T can be up to	12:09:22
8	eight?	12:09:27
9	A Correct. In --	12:09:29
10	Q Eight hops?	12:09:31
11	A In the example -- in your example where	12:09:32
12	there are only eight frequencies to select from.	12:09:36
13	Q Okay. So let's call time period T equals	12:09:38
14	eight hops; is that correct? Is that a fair	12:09:44
15	example to you?	12:09:46
16	A Yes. It is.	12:09:48
17	Q Okay. And the entire -- you -- how do you	12:09:50
18	define the entirety of time period T?	12:09:54
19	A I beg pardon, you -- you appear to say	12:10:00
20	that if we have eight frequencies as available	12:10:03
21	frequency to hop over, then T -- let's take the	12:10:08
22	example of T equal to eight.	12:10:14
23	And I agree that will be an example and	12:10:16
24	that would fit with the spirit and the precise	12:10:18
25	examples in '346. And it also is consistent with	12:10:25

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1	the -- the proposed claim construction by Canon.	12:10:30
2	I agree with that, and so we can use that example	12:10:36
3	for the purpose of illustration.	12:10:39
4	Q Okay. Did you just say that -- is that	12:10:42
5	Canon's claim construction? Did I understand that	12:10:45
6	correct?	12:10:48
7	A I'm sorry, it's my -- it's the	12:10:51
8	construction I am providing in my declaration.	12:10:54
9	Q Did you develop that claim construction?	12:11:01
10	A Sorry?	12:11:03
11	Q Did you -- did you develop that claim	12:11:03
12	construction?	12:11:09
13	A Yes.	12:11:09
14	Q Okay. Okay. So time period T equals	12:11:11
15	eight hops. In that example, the entirety of time	12:11:15
16	period T is eight hops, correct?	12:11:24
17	A We're using that as example. Is that	12:11:26
18	right? Okay. I affirm we're using this as	12:11:29
19	example. I'm waiting for what happens with this	12:11:34
20	example.	12:11:36
21	Q So with that example, what -- what would	12:11:37
22	you understand to be a portion of time period T?	12:11:39
23	How would you define a -- the word a "portion" of	12:11:44
24	time period T?	12:11:47
25	A I see. Okay. That's a -- this is	12:11:48

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1	actually perfect if -- for us to review what '346	12:11:52
2	talked about.	12:11:56
3	So in this -- in this particular example,	12:11:57
4	there would be a moment with -- so let's say	12:12:01
5	for -- four hops has taken place. 1, 2, 3, 4, and	12:12:07
6	now for the remainder of T, we need to look at how	12:12:11
7	to restrict the selection of the frequency such	12:12:19
8	that the -- the frequency that -- frequencies that	12:12:22
9	have been selected in the previous four would not	12:12:27
10	be repeated for the remainder of T. That's eight.	12:12:31
11	So you have four hops. We possibly have	12:12:35
12	used eight -- four frequencies in those four hops.	12:12:40
13	And we'd like to prevent any one of the four hops	12:12:43
14	from reappearing again from being re-selected	12:12:46
15	again in the remaining four hops.	12:12:50
16	So at this particular moment in time, I	12:12:54
17	would view a portion of time, okay, a portion of T	12:12:59
18	to be either the entirety of the four period,	12:13:03
19	okay, or just the next one. So for the next one,	12:13:08
20	I need to limit. I need to limit my frequency	12:13:12
21	selection to the other four frequencies that have	12:13:17
22	not been selected thus far.	12:13:21
23	So a portion of time is from the moment	12:13:23
24	that you started to apply constraint on the	12:13:28
25	frequency-hopping set available for your	12:13:35

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1 particular portion of time? The -- and the answer
2 is you -- you can eliminate frequencies from being
3 used. You can design such algorithm.

4 For what purpose is the key. The purpose
5 of minimizing or reducing frequency repeat will be
6 defeated if I were to do that.

7 Q No. I think the purpose of minimizing and
8 reducing the frequency being repeated would be
9 met. Elimination would be -- would not occur,
10 correct?

11 MR. MARTINELLI: Objection. Form.

12 THE WITNESS: No. Not if you were talking
13 about the entirety of the T. Right. If the
14 entirety of the communication period -- because if
15 you're doing the entire communication period, then
16 you would like to have as many frequency as
17 possible to hop in order to prevent the
18 possibility of repeats, or to minimize the number
19 of repeats.

20 But barring some frequencies from being
21 selected, you have -- you have now reduced the
22 number of frequencies you could use. And the
23 outcome would necessarily be more repeats would
24 have to take place. So there will be -- there
25 will be fewer frequency -- because there will be

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1 fewer frequencies to select from, and then the 12:35:22
2 frequency diversity will suffer as a result of 12:35:29
3 that. 12:35:31

4 Q Understood. So Dr. Ding, let's -- let's 12:35:31
5 go back to the example where two devices -- you 12:35:33
6 could develop a program where two devices are 12:35:36
7 communicating where the frequency hopping is 12:35:41
8 occurring between those two devices as long as 12:35:43
9 data is being communicated, correct? 12:35:47

10 A I can. 12:35:49

11 Q Okay. Now, let's say there are five 12:35:49
12 frequency -- let's say that data is being 12:35:53
13 communicated over a ten-minute period of time. 12:35:55

14 Do you understand that? 12:36:03

15 A Okay. 12:36:04

16 MR. MARTINELLI: I'm sorry, I don't mean 12:36:05
17 to interrupt. Whatever you said after "ten", I 12:36:07
18 didn't catch that. 12:36:12

19 MR. STERN: Sorry. Ten-minute period of 12:36:12
20 time. 12:36:14

21 MR. MARTINELLI: Okay. Thank you. 12:36:15

22 Q So two -- strike that. 12:36:15

23 Dr. Ding, you agree that you could develop 12:36:19
24 a -- a communication protocol where frequency 12:36:23
25 hopping is occurring during the entirety of data 12:36:31

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1	communication between two devices, correct?	12:36:33
2	A Yes.	12:36:36
3	Q And let's assume that the entirety of that	12:36:37
4	data communication between those two devices is	12:36:41
5	ten minutes.	12:36:45
6	A Okay.	12:36:46
7	Q Do you understand that?	12:36:46
8	A Okay.	12:36:47
9	Q Now, let's say there are five frequencies	12:36:48
10	that could be used. Each one -- each hop takes a	12:36:56
11	minute.	12:36:59
12	A Okay.	12:36:59
13	Q Okay. That means could you -- if	12:36:59
14	Frequency Number 1 is being used during Minute	12:37:07
15	Number 1 --	12:37:11
16	A Okay.	12:37:12
17	Q -- could you write code that stops	12:37:12
18	Frequency Number 1 from being used during Minute	12:37:16
19	Number 2; yes or no?	12:37:20
20	A If I have previously used Number 1, can I	12:37:25
21	write a code to say don't use Frequency Number 1	12:37:32
22	again/.	12:37:36
23	Q Not again. During Minute Number 2?	12:37:36
24	A Minute Number 2. Yes. Here -- you can.	12:37:39
25	You use Number 1 and you're not going to use	12:37:45

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1	Number 1 again, yeah. Yes.	12:37:48
2	Q Okay. Could you develop code where you	12:37:50
3	use Frequency Number 1 during Minute Number 1 --	12:37:52
4	A Yes.	12:37:56
5	Q -- but not -- not during Minute Number 2,	12:37:56
6	but then again at some portion between 3 and 10?	12:37:59
7	A What exactly -- I'm sorry, the requirement	12:38:05
8	is for me to write a code that says in Slot Number	12:38:09
9	1, use Frequency 1, but not to use that in Slot	12:38:14
10	Number 2. And then what happened later?	12:38:17
11	Q But then make it available in Slots Number	12:38:20
12	3 through 10.	12:38:23
13	A Make it available for Slot 3 and 10?	12:38:24
14	Q 3 through 10. Any slot in 3 through 10, I	12:38:30
15	want to make it available.	12:38:36
16	A It really depends. I didn't do -- have	12:38:37
17	not done this analysis. It really has to do with	12:38:38
18	what exactly the point is. So if there are only	12:38:41
19	two frequencies you're picking from, F1 and F2,	12:38:44
20	then you have no choice but to pick from one of	12:38:49
21	the two.	12:38:52
22	So you go on and so, eventually, if I say	12:38:52
23	no, after 1 and 2 you -- you get -- you get to go	12:38:56
24	back to F1 again, so yes, you can always do that.	12:39:01
25	So are there just two frequencies then?	12:39:06

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1	Q No. There were five frequencies.	12:39:11
2	A Okay. They were five frequencies. Okay.	12:39:13
3	So your question is -- if you repeat -- if you	12:39:16
4	could repeat question -- if I understand your	12:39:18
5	question better, I can answer that. The question	12:39:21
6	is what? I'm sorry.	12:39:23
7	Q Of course. Sure. Sure. So you -- you	12:39:24
8	stated -- I just want to back this up to try to	12:39:28
9	make this a little clear.	12:39:31
10	You stated earlier that you can develop a	12:39:33
11	communication protocol that uses frequency hopping	12:39:36
12	during the entire period of communication,	12:39:39
13	correct?	12:39:40
14	A Okay. Yes. The ten -- the ten minutes	12:39:40
15	you talked about yes. Ten minutes.	12:39:43
16	Q Ten minutes. And each time slot, there --	12:39:43
17	there are five hopping frequencies --	12:39:46
18	A Okay. Five. Okay.	12:39:48
19	Q -- but each -- each -- each slot that	12:39:49
20	could be used, we're going to cut up the ten	12:39:52
21	minutes into ten slots.	12:39:56
22	A Okay.	12:39:57
23	Q Okay. So five frequencies, you use	12:39:58
24	Frequency Number 1 in Slot number 1?	12:40:01
25	A Yes.	12:40:05

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1	Q Okay. And you could develop the code	12:40:05
2	where you use Frequency Number 1 in Slot Number 1,	12:40:09
3	prevented Frequency 1 from use -- being used in	12:40:12
4	Slot Number 2, but then again allow Frequency 1 to	12:40:15
5	be used between Slot Number 3 through 10.	12:40:19
6	You can develop that code, correct?	12:40:24
7	A I can write that code. For what purpose,	12:40:27
8	I don't know.	12:40:31
9	Q I understand. Thank you.	12:40:32
10	MR. STERN: Jeremy, how much time do we	12:40:38
11	have on the record?	12:40:40
12	THE VIDEOGRAPHER: We currently have	12:40:41
13	2 hours 16 minutes on the record.	12:40:45
14	MR. STERN: Rich, can we take another	12:40:52
15	quick break? I apologize for that.	12:40:56
16	MR. MARTINELLI: Yeah. No worries.	12:41:00
17	THE VIDEOGRAPHER: We are going off the	12:41:01
18	record at 12:40.	12:41:05
19	(A short break was had.)	12:41:07
20	THE VIDEOGRAPHER: We are back on the	12:51:06
21	record at 12:51.	12:51:12
22	BY MR. STERN:	12:51:18
23	Q Dr. Ding, I want to move on from what	12:51:19
24	we've been discussing a little bit into some of	12:51:25
25	the other terms that you provided constructions	12:51:28

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1	for, if that's okay?	12:51:33
2	A Certainly.	12:51:34
3	Q Okay. So I want to look at on page 25 of	12:51:35
4	your declaration, paragraph 69, in particular.	12:51:40
5	MR. STERN: And Will, could you pull it up	12:51:50
6	on the screen? I think it might be easier for	12:51:54
7	everyone to look at. And that's Exhibit Ding 2,	12:51:57
8	Ding Exhibit 2.	12:52:03
9	REMOTE TECHNICIAN: Which section was it	12:52:12
10	that you wanted on the screen?	12:52:14
11	MR. STERN: Paragraph 69 on page 25.	12:52:15
12	Okay. Perfect.	12:52:23
13	BY MR. STERN:	12:52:23
14	Q Dr. Ding, are you there on paragraph 69 on	12:52:24
15	page 25 of your declaration?	12:52:27
16	A Yes.	12:52:28
17	Q Great. Okay. So you provided opinions	12:52:29
18	with respect to the constructions for what are	12:52:36
19	colloquially known as the N terms as separately	12:52:42
20	for the F terms; is that correct?	12:52:44
21	A I'm sorry, what do you mean by	12:52:52
22	colloquially known as the --	12:52:57
23	Q Sorry. There -- there are a group of	12:52:58
24	terms that relate to the N frequencies?	12:53:01
25	A Right. Within the patent -- within the	12:53:09

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1 I -- I think it's exaggeration to -- to 13:08:22
2 say that they are ten minutes and you only hop 13:08:24
3 once per minute because that would be extremely 13:08:29
4 bad way of designing a system. 13:08:32

5 But you know, just for the sake of 13:08:34
6 argument, you can have ten minutes to look into -- 13:08:37
7 say, I'm going to look at ten minutes and I'll see 13:08:41
8 what -- what -- what example we can see, how to 13:08:44
9 define frequency selection over this period of ten 13:08:50
10 minutes. Yes. 13:08:54

11 Q Right. So a portion of time T in that 13:08:55
12 example, what would a portion of time T be? 13:09:03

13 MR. MARTINELLI: Objection. Form. 13:09:06

14 THE WITNESS: Hypothetical -- this -- this 13:09:06
15 is a hypothetical, and I don't know what -- 13:09:11
16 whether it has anything to do with the patent. 13:09:15

17 But in this hypothetical situation, if you 13:09:18
18 just come in and say, okay, a portion of time T, 13:09:20
19 tell me what a portion of time T is, it can be 13:09:24
20 anything. It can be a fraction of the hop too, or 13:09:27
21 it could be, you know, two-thirds of a hop period, 13:09:32
22 or one hop interval plus two-thirds. It can be a 13:09:35
23 portion. 13:09:40

24 I think -- but it would not have made 13:09:41
25 sense, unless when looking to the -- the entirety 13:09:42

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1 of the claim language and the specification to
2 understand what exactly we are writing this
3 communication algorithm for.

13:09:48

13:09:52

13:09:57

4 Are we trying to accomplish anything or
5 are we just doing it for fun so that we can
6 prevent some frequency from being used again,
7 thereby increasing the chance of repeat.

13:09:59

13:10:01

13:10:04

13:10:08

8 Q Okay. So in that example, a portion of
9 time period T would be one minute or the use of
10 one frequency slot?

13:10:11

13:10:18

13:10:25

11 A Okay.

13:10:27

12 Q Correct?

13:10:27

13 A You -- yeah. You can pick one -- one
14 minute to be a one frequency hopping slot, which
15 is, as I indicated to you, Mr. Stern, is
16 completely -- it's a pathological example. It
17 doesn't -- you would never do that.

13:10:28

13:10:33

13:10:37

13:10:40

13:10:47

18 But again, for the sake of our example,
19 one can make that example, make it like that. It
20 would not have anything to do with the claim, nor
21 the patent.

13:10:48

13:10:50

13:10:53

13:10:56

22 Q Sure. But -- and that would -- and that
23 one minute or one frequency hopping slot, that
24 would be a portion of time period T, correct?

13:10:58

13:11:00

13:11:05

25 A To a layman. Yeah. It is a portion of

13:11:07

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1	time.	13:11:11
2	Q Okay. And in that example, the entirety	13:11:12
3	of time period T would equal ten because you have	13:11:15
4	ten slots, correct?	13:11:18
5	MR. MARTINELLI: Objection. Form.	13:11:19
6	THE WITNESS: I beg pardon. I don't	13:11:20
7	understand. Are we saying that the entirety is T,	13:11:22
8	or the entirety is the communication time? I'm	13:11:26
9	not totally certain.	13:11:29
10	Yeah. Because we understand that the	13:11:30
11	communication time are never prelimited. You	13:11:35
12	cannot say, look, I know a Ferrari, you know, the	13:11:39
13	length time is ten minutes. I don't think -- your	13:11:44
14	earpiece and your phone know how long you're going	13:11:47
15	to be connected to. It will connect as long as	13:11:52
16	the battery last.	13:11:56
17	Q So communication times are never	13:11:57
18	prelimited; is that correct?	13:12:06
19	A I wouldn't say it's never limited. They	13:12:08
20	are -- they always limit you. As I said, your --	13:12:12
21	your battery time is -- I don't know how long your	13:12:16
22	earpiece battery time is. Mine is about, like,	13:12:19
23	three hours. And yeah, it's -- it's not going to	13:12:22
24	be more than three hours.	13:12:25
25	But also it depends on whether it's a	13:12:26

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1 communication, for example, between a submarine
2 and headquarter. And you will limit that
3 communication time to be short enough so that
4 the -- so as to evade any potential enemy
5 detection.

6 I would not -- I don't agree with your
7 statement that it's never limited. But is it
8 preset? Is it known? Mostly -- most of the time,
9 no. Sometimes, yes.

10 Q Okay. Okay. And then let's talk about
11 quickly on that same paragraph 69, the second
12 sentence down. You write -- you define, I guess,
13 what I would consider or I believe what can we
14 consider what -- F frequency terms; is that fair?

15 A Yes.

16 Q Okay. And you define the F frequency
17 terms to mean, for time period T, the number of
18 remaining frequencies available for frequency
19 hopping that have not been previously second
20 during that time period; is that correct?

21 A Yes.

22 Q And did the patentee use defined F
23 frequency terms in the patent in such a way as you
24 write here in your report in paragraph 69?

25 A I think -- I believe they did define F to

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1 be a frequency, allowable frequency. I think -- I 13:14:27
2 think that's the term. But they are -- and they 13:14:31
3 are decremented in size. 13:14:36

4 So one typically would look at Figure 6 to 13:14:38
5 see that the -- and also Figure 5 to see that the 13:14:42
6 F is the number of frequency that you -- that one 13:14:47
7 is allowed to select which has not been previously 13:14:54
8 selected in frequency hopping. 13:14:58

9 Q Dr. Ding, I understand that you believe 13:15:02
10 that the examples -- you read the examples in that 13:15:06
11 way. However, the patentee in any words actually 13:15:14
12 define the F frequency terms such that they could 13:15:21
13 not have been previously selected at all during 13:15:24
14 the entire time period T? 13:15:27

15 MR. MARTINELLI: Objection. Form. 13:15:30

16 THE WITNESS: That -- once again, that is 13:15:31
17 my understanding of what F represents, what F 13:15:39
18 stands for. And that's our claim -- that's what 13:15:43
19 we have submitted as my claim construction. 13:15:46

20 Q So let me -- let me try this on -- let me 13:15:51
21 try to ask this in another way. 13:15:55

22 Did the patentee define F to be such that 13:15:57
23 the -- that a frequency can only be used once 13:16:05
24 during the entirety of time period T? 13:16:11

25 A Does the patentee define it though in 13:16:17

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1 plain language? The answer is no. Does the
2 patent, together with the -- with the response to
3 notice of rejection explain that? Yes.

4 The patentee explicitly stated that over
5 the period of T, a previously selected frequency
6 would not be -- will be subsequently prohibited,
7 will be subsequently prohibited from being
8 selected again.

9 So in that context, if you look at the
10 definition of two sets, the bigger set with a set
11 of frequencies and the smaller set which is
12 allowable frequency, one with -- as a person of
13 skill in art would naturally conclude that F is as
14 we construed here in paragraph 69.

15 Q Okay. Dr. Ding, what -- what's -- how do
16 you define random or randomly?

17 A How do we define randomly? Yes. That's a
18 very -- it's a -- it's a physical and mathematical
19 question. So random would mean that you need
20 to -- you need to make certain that the numbers
21 when -- the sequence of numbers, okay, would
22 satisfy certain statistical property.

23 The statistical property, for example,
24 would show very weak correlation or no correlation
25 between successive numbers or -- or even not just

13:16:22

13:16:25

13:16:31

13:16:34

13:16:37

13:16:44

13:16:49

13:16:53

13:16:54

13:16:57

13:17:00

13:17:03

13:17:06

13:17:10

13:17:15

13:17:21

13:17:25

13:17:30

13:17:35

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13:17:56

13:17:58

13:18:02

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1 one right next to another, adjacent number, but 13:18:07
2 multiple numbers. 13:18:10

3 For example, Number 1 and Number 7 and 13:18:12
4 Number 14 and so forth, these numbers should not 13:18:15
5 exhibit certain correlation or strong correlation. 13:18:22
6 So in the sense it needs to be statistically 13:18:24
7 independent. That's random. So there are 13:18:28
8 statistical tests that would allow you to 13:18:31
9 determine whether a particular number's sequence 13:18:35
10 is random or not. 13:18:40

11 Q So if you had to construe the term random, 13:18:44
12 how would you propose a construction? 13:18:49

13 MR. MARTINELLI: Objection. Outside the 13:18:51
14 scope. 13:18:53

15 THE WITNESS: I would not construe random 13:18:54
16 because random is mathematically well-defined. 13:18:57

17 Q So you would never pose a construction for 13:19:03
18 the word random? 13:19:07

19 MR. MARTINELLI: Objection. 13:19:08

20 THE WITNESS: That's not my -- that's not 13:19:09
21 what I'm explaining. I'm saying that if someone 13:19:10
22 just talk about random, we know exactly what it 13:19:12
23 means statistically and mathematically, right, 13:19:18
24 Mr. Stern. 13:19:23

25 But if you are -- if you me put -- if you 13:19:24

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1 put me on the spot to explain what is random or
2 perform a claim construction of random, I would
3 have to look at what exactly this patent claims
4 are about and may potentially the patentee we're
5 talking about almost random, or not exactly random
6 or pseudorandom. So it is not possible for me to
7 know.

8 But if we want to be mathematically and
9 physically rigorous, we go to statistics. There
10 are many books that would have a much clearer and
11 complete, full definition about what would be a
12 random sequence. I think we can do a better job
13 than I can. That's what I'm opining on. I'm not
14 saying I wouldn't do it. I can just recite what
15 is mathematically accurate.

16 Q Sure. So what I'm -- correct me if I'm
17 wrong, but I'm just trying to understand what your
18 testimony is. And you can strike that preamble.

19 It's your opinion that a POSA outside of
20 the -- outside of looking at the '346 patent would
21 not need to construe it in order to understand
22 what -- what that term means?

23 MR. MARTINELLI: Objection. Form.

24 THE WITNESS: I'm sorry, construe what?
25 Random?

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1	Q Correct.	13:20:54
2	A Hypothetically -- first of all,	13:20:55
3	hypothetically, I -- we're not -- I'm not	13:20:57
4	construing random. We're -- I'm talking about	13:21:00
5	pseudorandom. These are completely different	13:21:04
6	terms.	13:21:06
7	And what my opinion is that I can	13:21:07
8	construe -- I can help construct -- construct --	13:21:11
9	the construction of random if -- if I'm asked to	13:21:14
10	do that. I have not done that analysis yet. But	13:21:20
11	hypothetically, I certainly could. I can do so in	13:21:23
12	such a way that it is entirely consistent with the	13:21:27
13	mathematical and statistical definition of random	13:21:31
14	numbers. I can absolutely do that.	13:21:35
15	Q But a person -- a person with a bachelor's	13:21:41
16	degree in electrical engineering or computer	13:21:47
17	science and has three to four years of practical	13:21:50
18	work or research experience in the wireless	13:21:53
19	communication field would understand what the term	13:22:00
20	random means without redefining it, correct?	13:22:03
21	A They -- they will have some idea about	13:22:08
22	what random means. Exactly how to -- there's a	13:22:11
23	difference again. I would emphasize, Mr. Stern,	13:22:17
24	we're not talking random. We're talking about	13:22:21
25	pseudorandom, in my opinion. And I don't	13:22:24

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1	understand why you insist on asking me to construe	13:22:26
2	or not construe random.	13:22:30
3	If you have -- if you would like to focus	13:22:32
4	on my declaration, where we're discussing	13:22:34
5	pseudorandom, I'll be more than happy to. But I'm	13:22:38
6	just -- I feel uncomfortable when you insist on me	13:22:42
7	playing the role of statistician or think what a	13:22:45
8	POSITA would have -- would have taken the risk of	13:22:49
9	miss -- of just defining or using their only	13:22:53
10	interpretation of what random really means.	13:22:56
11	I mean, random is literally mathematically	13:22:59
12	defined -- defined by mathematicians and	13:23:03
13	statisticians. I don't understand why are we even	13:23:08
14	discussing that because that's not part of my	13:23:11
15	opinion.	13:23:13
16	Q Are -- are you a mathematician or a	13:23:14
17	statistician by training?	13:23:18
18	A I am not. I use a lot of mathematics,	13:23:20
19	perhaps more so than my friends in the legal	13:23:27
20	field. I use a lot of statistics, perhaps more so	13:23:29
21	than my legal friend, lawyer friends, and people	13:23:32
22	in other fields of engineering. So I have a	13:23:35
23	fair -- fairly good understanding of statistics	13:23:43
24	and mathematics.	13:23:45
25	Q But you don't want to put yourself out as	13:23:49

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1 someone of enough skill to offer a construction of 13:23:52
2 the term random; is that fair? 13:23:58

3 A No. That's not totally what I'm saying. 13:24:01
4 The point is I -- I'm not -- I'm a scholar. I 13:24:04
5 don't want to offer opinions that are, you know, 13:24:09
6 academically wrong. So when we are just -- when a 13:24:14
7 person as you have just come and say, tell me what 13:24:18
8 random means, okay, which is entirely out of 13:24:22
9 context of this particular proceeding, I will say, 13:24:25
10 well, look it up. The mathematicians have done a 13:24:28
11 better job defining it, but it's -- it's got to 13:24:33
12 meet certain statistical properties. 13:24:35

13 And I'm just not willing to say how -- 13:24:38
14 what those random means in fear of missing one or 13:24:41
15 two properties. I just don't want to be 13:24:44
16 incomplete. I'm not trying to resist temptation 13:24:48
17 of defining it. I have pretty good confidence 13:24:52
18 that I might be able to capture it well. 13:24:55

19 But sitting here today, right now, you 13:24:59
20 want me to list all the properties. I'm afraid 13:25:01
21 I'm unable to do that. I -- like I said to you, I 13:25:04
22 didn't perform this analysis. 13:25:06

23 Q Understood. Thank you, Dr. Ding, for your 13:25:08
24 candor. 13:25:12

25 Okay. What's your understanding of the 13:25:13

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2 I, Karisa Ekenseair, the officer before
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9 requested; and that I am neither counsel for,
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13 IN WITNESS WHEREOF, I have hereunto set my
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15 October, 2021.

16 My commission expires: 6-18-2028

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